In the Claims:

1. (Currently Amended) An electronic circuit device for executing operations dependent on secret information, the electronic circuit device, comprising:

power supply connections;

a processing unit comprising a plurality of processing circuits for use in execution of respective parts of the operations dependent on the secret information, the processing circuits being fed from the power supply connections;

an activity monitor circuit, coupled to receive pairs of processing signals, each of the pairs of processing signals including an input signal and an output signal of one of the processing circuits, the activity monitor circuit being arranged to derive activity information from each pair of processing signals, the activity information indicative of whether each of the processing circuits generates a logic level transition, and to derive from the activity information a combined activity signal indicative of a sum of power supply currents that will be consumed by the processing circuits dependent on the processing signals;

a current drawing circuit connected to the power supply connections and controlled by the activity monitor circuit to draw a cloaking current controlled by the combined activity signal, so that power supply current variations dependent on the secret information are cloaked in a combination of the cloaking current and current drawn by the processing circuits;

characterized in that the activity monitor circuit is coupled to receive a pair of processing signals for each of the processing circuits, coming into and out of the processing circuit respectively, the activity monitor circuit being configured to derive the activity information from each pair of processing signals and to derive from the activity information for said processing circuits a combined activity signal dependent on the processing signals indicative of a sum of power supply currents that will be consumed by said processing circuits in combination; the activity monitor circuit being coupled to the current drawing circuit to control generation of the cloaking current under control of the combined activity signal.

2. (Previously Presented) An electronic circuit device according to Claim 1, wherein the processing unit comprises a clock circuit, combinatorial logic circuits and registers clocked by the clock circuit and connected between respective parts of the combinatorial logic circuits, the pairs of processing signals comprising pairs of input and output signals of the registers, the current drawing circuit being arranged to adjust a value of the cloaking current dependent on the activity of the registers at instants synchronized by the clock circuit.

3. (Currently Amended) An electronic circuit device according to Claim 2, organized as a pipe-line of successive parts of the combinatorial logic circuits, each pair of successive parts coupled via a respective one or respective ones of the registers, the electronic circuit device, comprising:

a plurality of activity monitor circuits each coupled to receive pairs of input and output signals of the respective one or ones of the registers between a respective pair of successive parts of the combinatorial logic circuits, and to derive a combined activity signal from the pairs of input output signals;

a plurality of current drawing circuits connected to the power supply connections, each controlled by a respective one of the activity monitor circuits to draw a cloaking current controlled by the combined activity signal derived by that respective one of the activity monitor circuits.

4. (Previously presented) An electronic circuit device according to Claim 3, arranged to activate the current drawing circuits in selected clock cycles, when the corresponding pipe-line stages process secret information.

5. (Previously presented) An electronic circuit device according to Claim 1, having a trigger input coupled to the current drawing circuit, arranged to enable drawing of the cloaking current only upon receiving a trigger signal that triggers or accompanies execution of a secret information dependent process in the electronic circuit device.

6. (Previously presented) An electronic circuit device according to Claim 1, comprising a reference current pattern generator, the current drawing circuit being arranged to adjust the value of the cloaking current so that the combination of the cloaking current and current drawn by the processing circuits substantially equals a temporal reference current pattern generated by the reference current pattern generator.

7. (Currently Amended) A method of executing operations dependent on secret information in an electronic circuit, the method comprising:

supplying power supply current to processing circuits;

executing respective parts of operations that ~~are~~ dependent on the secret information using the processing circuits;

receiving pairs of processing signals coming into and out of each ~~respective ones~~ of the processing circuits, each of the pairs of processing signals including an input signal and an output signal of one of the processing circuits;

deriving activity information from each pair of processing signals, the activity information indicative of whether each of the processing circuits generates a logic level transition,

~~deriving from the activity information a combined activity signal indicative of a sum of power supply currents that will be consumed by the processing circuits dependent on the processing signals;~~

drawing a cloaking current controlled by the ~~combined~~ activity information~~signal~~, and combining ~~that~~the cloaking current with current drawn by the processing circuits so that power supply current variations dependent on the secret information are cloaked in the combination of the cloaking current and current drawn by the processing circuits,

characterized by

deriving from the activity information a combined activity signal indicative of a sum of power supply currents that will be consumed by all of the processing circuits in combination dependent on the processing signals; and

controlling generation of the cloaking current with the combined activity signal.

8. (Previously presented) The method of claim 7, further comprising determining the cloaking current by subtracting the sum of power supply currents from a temporal reference current pattern.

9. (Cancelled)

10. (Cancelled).

11. (Cancelled).

12. (Cancelled).

13. (Previously presented) The electronic circuit device of claim 1, wherein the current drawing circuit is a digital to analog converter that is configured to convert a digitally coded value into an analog power supply current that is equal to the cloaking current.

14. (Previously presented) The electronic circuit device of claim 6, further comprising a subtractor that is configured to determine the cloaking current by subtracting the sum of power supply currents from the temporal reference current pattern generated by the reference current pattern generator.